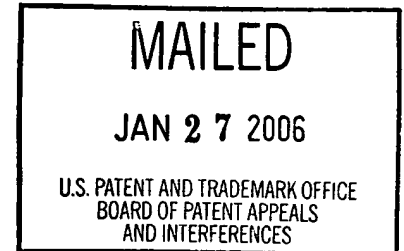


The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Ex parte MICHAEL STUKE,  
MARKUS LAPCZYNA and  
KURT MULLER



Appeal No. 2006-0339  
Application 09/647,207

ON BRIEF

Before KIMLIN, PAK and JEFFREY T. SMITH, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 23, 24, 26-34, 36, 45 and 46. Claim 23 is illustrative:

23. A process for the adhesive-free production of polymeric components, including the steps of:

- (a) preparing a polymeric substrate which, on at least one surface, has depressions forming at least one of micro- and nanochannel structures,

Appeal No. 2006-0339  
Application 09/647,207

(b) applying, by uniform pressure in the range of from 0.1 to 1000 kg/cm<sup>2</sup> extending over said surface, a polymeric covering to said surface,

C) slowly heating said substrate, with said covering applied by pressure, to a heating temperature which is at least as high as the glass transition temperature of at least one of said substrate and of said covering and holding the substrate with the covering within  $\pm 3^{\circ}\text{C}$  of said heating temperature for at least 5 minutes, for the bonding thereof, and

(d) cooling the substrate for up to 30 seconds down to a temperature of about  $40^{\circ}\text{C}$ .

The examiner relies upon the following references as evidence of obviousness:

Oshida et al. (Oshida)	3,997,386	Dec. 14, 1976
McReynolds	5,882,465	Mar. 16, 1999
Parce et al. (Parce)	6,046,056	Apr. 4, 2000
Soane et al. (Soane)	6,176,962	Jan. 23, 2001

Appellants' claimed invention is directed to a process for the adhesive free production of polymeric components. The process entails extending a polymeric covering over the surface of a polymeric substrate that has depressions forming micro- and nonchannel structures. The substrate is slowly heated to a temperature at least as high as a glass transition temperature of the substrate and/or covering while the covering is applied by pressure. The substrate/covering is held at the heating temperature for at least 15 minutes for bonding and the substrate is then cooled for up to 30 seconds to a temperature of about  $40^{\circ}\text{C}$ .

Appeal No. 2006-0339  
Application 09/647,207

Claims 23, 24, 26-29, 31-34, 36, 45 and 46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Soane in view of McReynolds and Oshida. Claim 30 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the stated combination of references further in view of Parce.

Appellants do not set forth a separate substantive arguments for any particular claim on appeal. Accordingly, with the exception of separately rejected claim 30, the appealed claims stand or fall together with claim 23.

We have thoroughly reviewed each of appellants' arguments for patentability. However, we are in complete agreement with the examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of Section 103 in view of the applied prior art. Accordingly, we will sustain the examiner's rejections for the reasons set forth in the answer, which we incorporate herein, and we add the following for emphasis only.

There is no dispute that Soane, like appellants, is directed to adhesive-free bonding of micro fluid devices that involves joining a polymeric substrate that has depressions forming micro-channels with a polymeric cover by utilizing heat and uniform pressure. Soane also teaches slowing cooling the temperature of the substrate. As recognized by the examiner, Soane is silent with respect to the

Appeal No. 2006-0339  
Application 09/647,207

pressure range presently claimed, holding the heating temperature for at least 15 minutes, and the specifics of the cooling time and temperature. However, it is well settled that it is a matter of obviousness for one of ordinary skill in the art to resort to routine experimentation to determine the optimum temperatures, pressures, etc. of a known process, and that changes in temperature, pressure, etc. for a known process is a matter of obviousness for one of ordinary skill in the art. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990); In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). It is appellants' burden to demonstrate that claimed changes in temperature and pressure are critical in that they lead to an unexpected result. In the present case, appellants have not established on the record the temperatures and pressures that one of ordinary skill in the art would have customarily used in performing the process of Soane, and how the claimed process parameters are different than such conventional parameters, or lead to an unexpected result. Furthermore, as explained by the examiner, McReynolds is also directed to the adhesive-free bonding of microfluidic devices via bonding a polymeric substrate having micro-channels to a polymeric cover, and it teaches that "the applied temperature and pressure will depend on the nature of the polymeric material (column 4, lines 33-36); it

being noted that McReynolds (column 3, lines 41-43) discloses polymers (i.e., polymethyl- acrylate) identical to those of the present invention (present claim 45) and Soane (column 9, line 66-column 10, line 1)" (page 5 of answer, second paragraph).

As a result, we fully concur with the examiner's rationale that "selection of a particular pressure range for the process of Soane would have been within [the] purview of the skilled artisan at the time the invention as made depending on the polymeric material used because such is known in the art, as taught by McReynolds, wherein the skilled artisan would have been inclined to select a pressure range that produced a strong bond without deforming the substrate and/or cover" (page 5 of answer third paragraph). Again, appellants have failed to proffer any objective evidence which demonstrates that processes within the scope of the appealed claims produce anything other than that which would have been expected by one of ordinary skill in the art. As for the claimed holding time, the examiner properly notes that Soane expressly discloses that the temperature is held "for a time period sufficient to allow the polymer molecules to interpenetrate the two surfaces and create a morphological bonding" (column 3, lines 1-4). In addition, Oshida evidences that it would have been obvious for one of ordinary skill in the art to slowly cool the polymeric substrates while maintaining

Appeal No. 2006-0339  
Application 09/647,207

the applied pressure in order to prevent over cooling (see column 2, lines 34-36).

As for separately rejected claim 30, appellants only submit that "Parce fails to remedy the deficiencies of the combination of Soane, McReynolds and Oshida" (page 6 of principal brief, fourth paragraph).

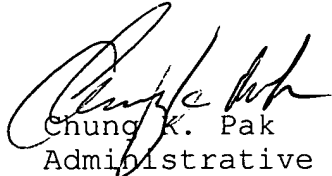
In conclusion, based on the foregoing and the reasons well-stated by the examiner, the examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.36(a)(iv) (effective Sept. 13, 2004)

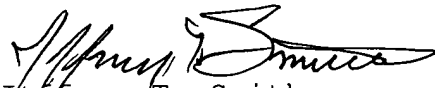
AFFIRMED



Edward C. Kimlin )  
Administrative Patent Judge )



Chung K. Pak )  
Administrative Patent Judge )



Jeffrey T. Smith )  
Administrative Patent Judge )

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Appeal No. 2006-0339  
Application 09/647,207

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